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Battle Trauma and DNBI

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INTRODUCTION

New NATO force structures and strategic concepts emphasise Mobility, Interoperability, Sustainability, Jointness and Multinationality; i.e. deployment of multinational forces to any area for any mission.

The very nature of those operations calls for the likelihood of missions in locations far from those of the sending nations, areas that may have challenging factors of geographical conditions, lack of infrastructure, or indigenous populations suffering from hunger, thirst, epidemic and endemic diseases, trauma or disability. Special environmental and occupational hazards, given in the mission areas have to be considered.

Therefore appropriate Force health protection is a core competency. It must ensure a full spectrum health services that:

- emphasise fitness, preparedness and preventive measures
- improve the monitoring and surveillance of forces engaged in military operations
- enhance service members' and commanders' awareness of health threats before they can affect the force and
- support the health needs of the military forces and their families across the continuum of medical services.

CASUALTY PREVENTION

Casualty prevention is essential throughout the health life cycle of service members. During employment, the enemy and the "total" environment both generate threats to the forces. The enemy threat produces most **combat-related** casualties commonly called **Battle Injuries (BI)**, while the total environment threat produces **Disease And Non Battle Injury (DNBI)** casualties. (fig.1)

NATO RTO Specialists' Meeting

THE IMPACT OF NATO/MULTINATIONAL MILITARY MISSIONS
ON HEALTH CARE MANAGEMENT
ACE DIRECTIVE 85-8
**"ACE Medical Support Principles,
Policies and Planning Parameters"**

Categories of Personnel Casualties

Battle Casualties:

+ Killed in Action	[KIA]
+ Captured and Missing in Action	[CMIA]
+ Wounded in Action	[WIA]
+ Battle Stress Cases	[BS]

Non Battle Casualties:

+ Diseased and Non-Battle Injured	[DNBI]
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cont.

DNBIs historically have accounted for three-quarters or more of battlefield admissions (69 percent in Vietnam, over 95 percent in World War II and Somalia). Prevention of DNBI casualties requires the full commitment of individual service members and unit commanders. The prevention of DNBI casualties historically has focused on reducing or eliminating the risk of food, water, waste, and insect born illnesses, and heat and cold injuries during deployments. However, Operation Desert Shield/Desert Storm demonstrated the need to place a much greater emphasis on environmental and occupational exposures, combat stress and non battle injuries. Comprehensive, continuous military medical surveillance, including collection, analysis, and recording of objectively determined exposure levels, is necessary to counter these non enemy threats, which can dramatically affect the health of military personnel. Following several fundamental tenets of casualty prevention will lower DNBI rates and sustain the health and fitness of the fighting force. These tenets are:

- identifying preventable threats and implementing countermeasures
- infectious disease prevention
- mental health casualty prevention
- total environmental and occupational health casualty prevention
- non battle injury prevention
- risk communication and
- joint health surveillance.

Although disease and non battle injuries have historically caused most of armed forced casualties, battle injuries remain a very significant concern. Services' medical personnel provide support for prevention of **BI** - casualties by anticipating and preparing to counter the adverse medical effects of the enemy's operational threats. Typical support includes such areas as research on the best body armour for conventional weapon threats and measures and substances required to counter biological, chemical, or nuclear weapons effects.

CASUALTIES ESTIMATION

Casualties estimation is the core of medical plans. IN any scenario the analysis of likely casualty rates and numbers has a great political and operational significance and is fundamental in establishing medical support requirements. The casualty estimate is a prediction of total losses of personnel in an operation due to various causes. It is expressed in numbers per day. Casualties are broken down into BC and Non Battle Casualties (Fig.1).

Casualty rate is the operational estimate of the number of BC, which will result from the operation. Casualty rates are expressed as a daily rate (number of casualties/100/day). Historically casualty rates give the planners the frame of reference for those rates that can apply to the specific operation. Once the rates have been chosen, they can be applied to the force to be deployed to produce an estimation of casualties (both BC and DNBI).

The process of casualty estimation for a specific operational plan draws on a broad base of knowledge on three linked operational parameters:

- Forces defined by size (the population at risk (PAR), configuration of operation (structural and functional organisation, order of battle and scheme of manoeuvre).
- Time during which a rate is applied
- Operational dynamics visualised as attacker-defender interactions.

The medical planner will support the development of the operational plan by constructing a profile of plausible rates for a given operation, which describes the rate behaviour - pulses and pauses - and their variability over the full force and time. Since plausible and reasonable patterns of rates are associated with the major patterns of operations, the judgements of possible operational results are crucial. The medical planner should realise that casualty estimation, which reflects the ultimate view of what will likely happen along the time line and across the force, is not primarily his responsibility. The responsibility for providing casualty estimates lies with the J3 staff. Projection of operational results should reflect the commander and staff's appreciation of the projected scenario.

With regard to the estimation of BC in PSOs, there is little historical data but, it can be assumed that casualty estimates would be significantly lower and different, in kind and character, than in conventional warfare. In some operations, though no combat would be involved, casualties could result from the military operational environment (e.g. from residual mines, snipers, etc.) and these casualties would be counted as BC.

A detailed analysis of expected sources of DNBI based on historical and current data would enable medical and operational staffs, working in concert, to produce a provisional DNBI rate for the operation. This is a technical estimation of the probable rate of diseases and injuries not resulting from combat, which can be expected in the force, once deployment begins. DNBI rate is mission dependent and dynamic, related to the level and nature of activity, the acclimatisation, training and living conditions of the deployed personnel. DNBI rates for generic planning are provided in AD 85-8. The experience gained in recent NATO deployments shows that the AD 85-8 set of occurrence rates remains valid. The implementation of a morbidity surveillance system in NATO deployments will allow NATO to establish a library of health surveillance information that would assist medical support planning for future operations. A comprehensive DNBI analysis could produce more effective preventive medicine measures, including recommended policy on immunisation, prophylaxis and troop education. It could also be a driving factor in the size and capability of medical resources required in different scenarios.

NBC Casualty Estimates. Guidance for the estimation of casualties from nuclear attack can be found in STANAG 2475 NBC/MED. Studies into casualty estimates with regard to biological and chemical attack are being carried out and are published as STUDY 2476 NBC/MED (Biological) and STUDY 2477 NBC/MED (Chemical). When completed and agreed by nations, these studies will form, covered by STANAG 2475, AMedP-8 (A), which will then comprise three volumes.

According to the ACE DIRECTIVE 85-8 following Battle casualties for an army mission can be expected

Command Level	BC Rate	BS Rate	Total BC Rate
Battalion	20,5%	4,1%	24,6%
Brigade	6,9%	1,4%	8,3%
Corps	1,4%	0,3%	1,7%
Army	1,0%	0,2%	1,2%

The different categories apply in the following percentages:

- Killed in action KIA 17%
- Captured/missing in action CMIA 8%
- Wounded in action WA 58%
- Battle stress cases BS 17%

The return to duty rates (RTD)/ Admission - to - hospital (ATH) rates are given in fig.2



ACE DIRECTIVE 85-8

Return-to-Duty rates (RTD) / Admission-to-Hospital (ATH)

Wounded-in-Action (WIA)

RTD rate	10 %
ATH rate	90 %

Battle Stress / Battle Shock

RTD rate

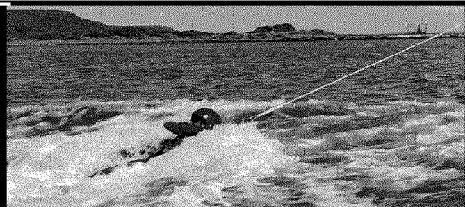
at Battalion	within 24 hrs	15 %
at Brigade	within 36 hrs	45 %
at Division	within 60 hrs	30 %

ATH rate

10 %

Diseased and Non-Battle Injured

	Disease	NBI
RTD rate	90 %	40 %
ATH rate	10 %	60 %



EPINATO - REPORT

Summary of disease and Non- Battle Injuries SFOR, 1999

Due to variability of DNBI reporting within SFOR, data compiled for this report should be interpreted as estimates of morbidity, lost duty days and medical resource usage in 1999. The average incidence rate for all causes of DNBI in SFOR was 86.6 cases per 1000 soldier weeks (range 61.2 - 105.8) in 1999. Disorders of ear nose and throat remains the most frequently reported condition in 1999 with an average rate of 14.9 cases per 1000 soldier weeks. Infectious diseases accounted for over one Quarter of all DNBI events and 40 % of hospital admissions. Dermatological problems was the second most commonly reported condition (11.2). Injuries represent 27 % of DNBI reported, and as a class are the most important cause of light duty days, lost duty days, and specialist consultations.(injuries due to sport (4.1); injuries due to training (2.5); Road traffic accidents (0.6).

Reduction of injuries continues to be a priority and will require not only further investigation into the specific circumstances surrounding injury events, but also command emphasis and the provision of expertise to implement injury prevention plans where needed.